

IN THE CLAIMS:

1-17. (Canceled)

18. (Currently amended) A method of producing and treating a sheet suited to be used as a component or as a part of a component in a fuel assembly for a nuclear light water reactor, which method comprises the following steps:

- a) producing a sheet of a Zr-based alloy by forging, hot rolling and cold rolling in a suitable number of steps, wherein said alloy contains at least about 96 weight percent Zr;
- b) carrying out one of an $\alpha+\beta$ quenching and a β quenching of the sheet when the sheet has been produced to a thickness which is equal to the final thickness, and approximately equal to the final thickness, of the finished sheet;
- c) heat treating of the sheet in the α -phase temperature range of said alloy, wherein step c) is carried out after steps a) and b) have been carried out, and wherein
 - the sheet is stretched during the heat treatment according to step c);
 - wherein said stretching is carried out such that the sheet directly after having gone through the stretching has a remaining elongation compared to the state of the sheet immediately before the stretching; and
 - wherein said remaining elongation is between about 0.1% and about 7%.

19. (Previously presented) A method according to claim 18, wherein step b) is a β quenching.

20. (Previously presented) A method according to claim 18, wherein said stretching is carried out at a temperature of at most the temperature which constitutes the highest temperature in the α -phase temperature range of the alloy and at least at the temperature which is about 70% of said highest temperature in $^{\circ}\text{K}$.

21. (Currently amended) A method according to claim 20, wherein ~~about~~ said stretching is carried out at a temperature which is between about 80% and about 98% of said highest temperature in °K.

22. (Cancelled)

23. (Currently amended) A method according to claim [[22]] 18, wherein said stretching is carried out such that said elongation is longer than a critical degree of deformation of the alloy.

24. (Cancelled)

25. (Cancelled)

26. (Previously presented) A method according to claim 18, wherein said component defines a longitudinal direction which, when the component is used in said fuel assembly, is at least substantially parallel to a longitudinal direction of the fuel assembly and wherein said stretching of the sheet is carried out in a direction which corresponds to the longitudinal direction of said component for which the sheet is intended.

27. (Withdrawn) A method for producing a channel box for use in a fuel assembly for a nuclear boiling water reactor, the method comprising the steps of:

producing at least one sheet of Zr-based alloy by the following steps:

forging, hot rolling and cold rolling in a suitable number of steps, wherein said alloy contains at least about 96 weight percent Zr, quenching said sheet by one of $\alpha+\beta$ quenching and β quenching when the sheet has been formed to a desired thickness, heat treating the sheet in the α phase temperature range of said alloy, wherein said heat treating step is performed after said producing and quenching steps, and wherein said sheet is stretched during said heat treating step; and forming said sheets into a channel box.

28. (Withdrawn) A method for producing a water channel for a fuel assembly forming part of a nuclear boiling water reactor, comprising the steps of :

producing at least one sheet of Zr-based alloy by the following steps:

forging, hot rolling and cold rolling in a suitable number of steps, wherein said alloy contains at least about 96 weight percent Zr, quenching said sheet by one of $\alpha+\beta$ quenching and β quenching when the sheet has been formed to a desired thickness, heat treating the sheet in the α phase temperature range of said alloy, wherein said heat treating step is performed after said producing and quenching steps, and wherein said sheet is stretched during said heat treating step; and

forming said sheets into a water channel.

29. (Withdrawn) A fuel assembly for a nuclear boiling water reactor comprising:

a channel box defined at least in part by channel walls, said channel walls having a material structure obtained by forming said walls from at least one sheet of Zr based alloy produced by the following steps:

forging, hot rolling and cold rolling in a suitable number of steps, wherein said alloy contains at least about 96 weight percent Zr, quenching said sheet by one of $\alpha+\beta$ quenching and β quenching when the sheet has been formed to a desired thickness, heat treating the sheet in the α phase temperature range of said alloy, wherein said heat treating step is performed after said producing and quenching steps, and wherein said sheet is stretched during said heat treating step; and

a plurality of fuel rods comprising nuclear fuel material arranged within said channel box.

30. (Withdrawn) A fuel assembly for a nuclear boiling water reactor comprising:
at least one water channel defined at least in part by walls, said walls having a material
structure obtained by forming said walls from at least one sheet of Zr based alloy produced by
the following steps:

forging, hot rolling and cold rolling in a suitable number of steps, wherein said
alloy contains at least about 96 weight percent Zr, quenching said sheet by one of $\alpha+\beta$
quenching and β quenching when the sheet has been formed to a desired thickness, heat
treating the sheet in the α phase temperature range of said alloy, wherein said heat
treating step is performed after said producing and quenching steps, and wherein said
sheet is stretched during said heat treating step.